

ALGEBRA I UNIT 3 REVIEW  
LINEAR FUNCTIONS

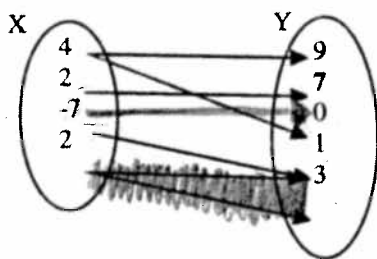
NAME \_\_\_\_\_  
DATE \_\_\_\_\_ BL \_\_\_\_\_

1. State the domain and range of the following functions. Then state whether or not the relation is a function.

a.

x	y
3	-4
12	6
11	2
12	1

b.



c.  $\{(4,7), (9,11), (5,-6), (-2,-6)\}$

1.a.D:  $\{3, 11, 12\}$

R:  $\{-4, 1, 2, 6\}$

Fn? NO

b.D:  $\{-7, 2, 4\}$

R:  $\{0, 1, 3, 7, 9\}$

Fn? NO

$(4, 9) (4, 1)$

c.D:  $\{-6, -2, 4, 9\}$

R:  $\{-6, 5, 7, 9\}$

Fn? YES

d.D:  $\{-4, 1, 2, 4\}$

R:  $\{-2, 1, 3\}$

Fn? YES

e.D:  $\{1, 2, 4\}$

R:  $\{-5, 0, 9, 11\}$

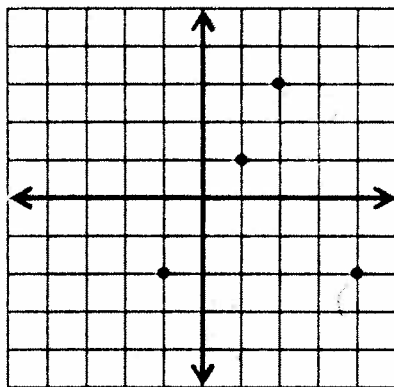
Fn? NO

f.D:  $\{3, 4, 5, 6\}$

R:  $\{1\}$

Fn? Yes

d.



passes vertical line test

e.  $\{(1,-5), (2,11), (2,9), (4,0)\}$

f.

x	y
3	1
4	1
5	1
6	1

2. Answer the following questions using the table below.

x	1	2	3	4	5
y	-4	1	6	11	16

a. Name the output associated with the input 1.

20a. -4

b. Name the input associated with the output 1.

b. 2

c. ~~Write the equation for the recursive pattern in the table.~~

~~21. 11 - 5 = 6~~

III. Matching. Match each equation with the pattern illustrated in the tables below.

C 3.  $y = \frac{2}{3}x + 4$

A.

x	-3	-1	2	6
y	-10	-8	-5	-1

B.

x	-3	-1	1	2
y	5	1	-7	-10

A 4.  $y = x - 7$

C.

x	-3	0	3	9
y	2	4	6	10

D.

x	-2	2	4	6
y	1	3	4	5

D 5.  $y = \frac{1}{2}x + 2$

6 6.  $y = -3x + 4$

IV. Solve.

7. Find  $f(2)$  if  $f(x) = x^2 - 5x + 8$

$(2)^2 - 5(2) + 8$

25. 2

8. If  $f(x) = 6x - 8$ , find the range if the domain is  $\{-2, 0, 1, 6\}$ .

26.  $\{-20, -8, -2, 28\}$

9.a. An electrician charges \$45 for a service call and then charges \$25 an hour. Write a function that can be used to find the total amount that the electrician charges.

b. Use the function to determine how much the electrician charges for working 6 hours.

$$f(x) = 25x + 45$$

$$= 25(6) + 45$$

1a.  $f(x) = 25x + 45$   
b. \$195.00

10. You want to buy one CD case which costs \$15 and several CD's which cost \$12 each. Write a function that can be used to determine the total cost of your purchase before taxes.

b. Use the function to determine how much it will cost if you buy 11 CD's.

$$f(x) = 12x + 15$$

$$= 12(11) + 15$$

2a.  $f(x) = 12x + 15$   
b. \$147.00

11. Given  $f(x) = 2x^3 - 4x^2 + 5x - 10$ , find the <sup>range</sup> ~~domain~~ if the <sup>domain</sup> ~~range~~ is  $\{-10, 0, 23, 308\}$ .

1.  $-2460, -10, 22, 323$

3. 58058298

Find the slope of the line through each pair of points.

12.  $x_1, y_1$   $x_2, y_2$   
 $(-1, 2)$  and  $(0, 5)$

$$m = \frac{5-2}{0-(-1)} = \frac{3}{1} = 3$$

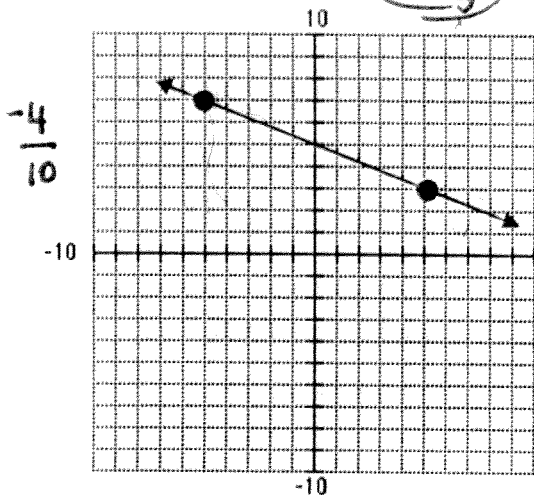
13.  $x_1, y_1$   $x_2, y_2$   
 $(1, 12)$  and  $(6, 22)$

$$m = \frac{22-12}{6-1} = \frac{10}{5} = 2$$

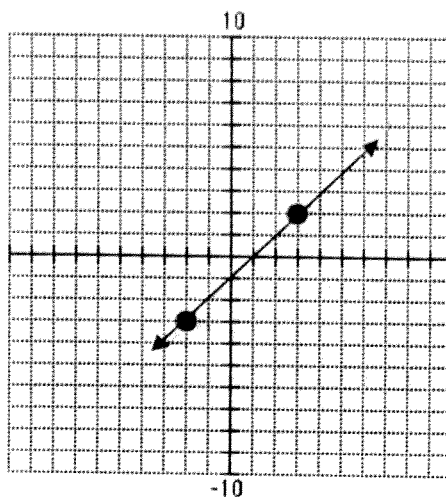
Find the slope of each line.

14.

$$-\frac{2}{5}$$



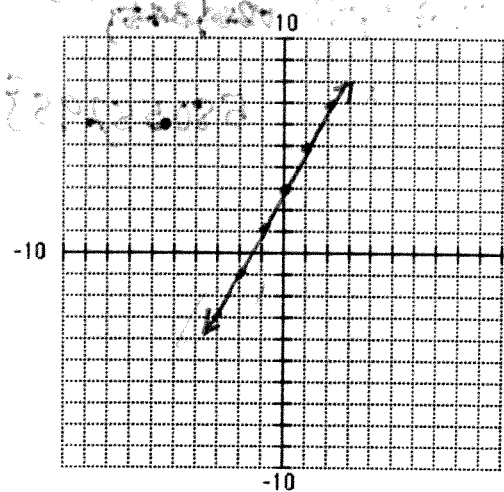
15.



$$\frac{5}{5} = 1$$

For # 16-19, given the linear equation, create a graph

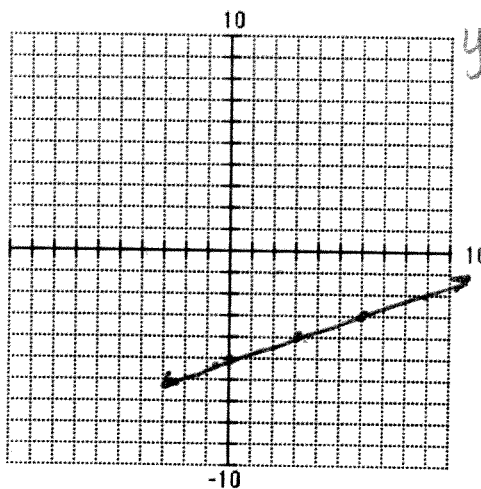
16.  $y = 2x + 3$



17.  $y = \frac{1}{3}x - 5$

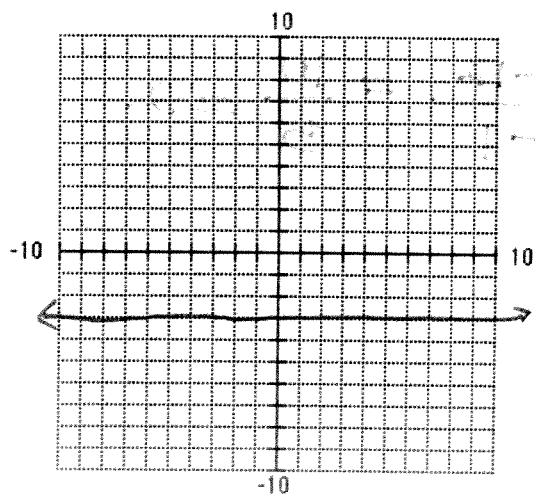
slope =  $\frac{1}{3}$

y-int =  $-5$



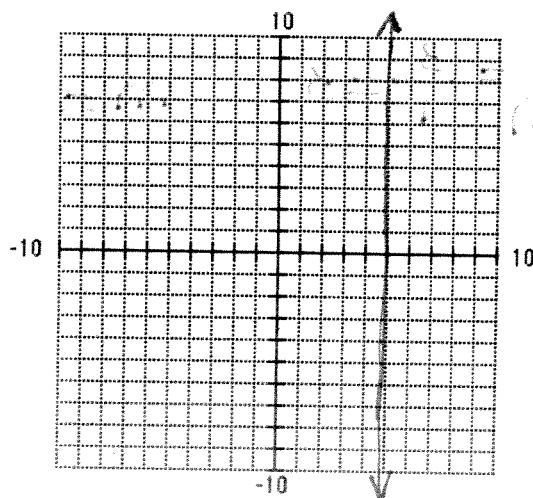
18.  $y = -3$

$1 + 0y$

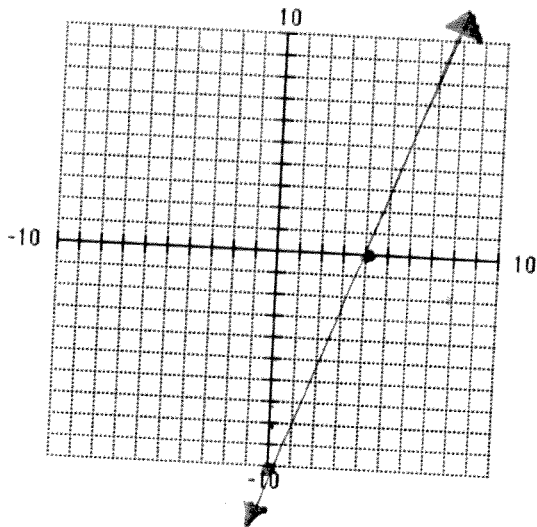


19.  $x = 5$

$\sqrt{6}x$



20. Graph  $-5x + 2y = -20$  using the x- and y-intercepts.



$$-5x + 2y = -20$$

$$-5x + 2(0) = -20$$

$$\frac{-5x}{-5} = \frac{-20}{-5}$$

$$x = 4$$

$$(4, 0)$$

$$-5(0) + 2y = -20$$

$$\frac{2y}{2} = \frac{-20}{2}$$

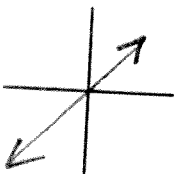
$$y = -10$$

$$(0, -10)$$

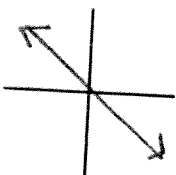
$$(4, 0) (0, -10)$$

Sketch a line with the given slope:

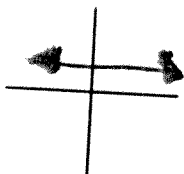
21.



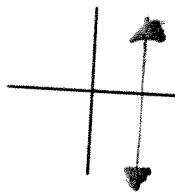
Positive



Negative



Zero



Undefined

2. Determine the solution of each linear function given the equation. Verify your answer using your graphing calculator.

a.  $-8(x - 2) - 40 = 0$

$$x = -3$$

b.  $2x + 6 = 5x - 9$

$$\begin{array}{r} -2x \quad -2x \\ \hline \end{array}$$

$$6 = 3x - 9$$

$$\begin{array}{r} +9 \quad +9 \\ \hline \end{array}$$

$$15 = 3x$$

$$\frac{15}{3} = \frac{3x}{3}$$

$$5 = x$$

$$x = 5$$